

**CLAIMS**

1. A rotary valve assembly for an internal combustion engine comprising a cylinder head and an axial flow rotary valve rotatable within a bore in said cylinder head, said valve having a port extending from a peripheral opening on the periphery of said valve to an axial opening at one end of said valve, said peripheral opening periodically communicating with a combustion chamber through a window in said bore as said valve rotates, said peripheral opening having a first trailing edge and said window having a second trailing edge whereby said port closes from said combustion chamber as said first trailing edge passes said second trailing edge as said valve rotates, **characterised in that** said first and second trailing edges are disposed such that as said port closes from said combustion chamber the instantaneous intersection point of said first and second trailing edges progressively moves away from said axial opening over at least 50% of the length of said window.
2. A rotary valve assembly as claimed in claim 1 wherein said port is an inlet port.
3. A rotary valve assembly as claimed in claim 1 wherein said first and second trailing edges are disposed such that as said port closes from said combustion chamber the instantaneous intersection point of said first and second trailing edges progressively moves away from said axial opening over substantially the whole length of said window.
4. A rotary valve assembly as claimed in claim 1 wherein at least 50% of said first trailing edge is substantially linear and oblique to the axis of said valve, and said second trailing edge is substantially linear and parallel to the axis of said valve.
5. A rotary valve assembly as claimed in claim 4 wherein said first trailing edge is substantially linear and oblique to the axis of said valve.
6. A rotary valve assembly as claimed in claim 1 wherein said window is substantially rectangular.

7. A rotary valve assembly as claimed in claim 1 wherein the length of said window is at least 60% of the bore diameter of the cylinder that said rotary valve assembly is adapted to suit.

8. A rotary valve assembly for an internal combustion engine comprising a cylinder head and an axial flow rotary valve rotatable about an axis within a bore in said cylinder head, said valve having a port extending from a peripheral opening on the periphery of said valve to an axial opening at one end of said valve, said peripheral opening periodically communicating with a combustion chamber through a window in said bore as said valve rotates, **characterised in that** every axial portion of said peripheral opening, said window or both that is longer than one half of the length of said window is asymmetric about a plane passing through the axial mid-point of said portion, perpendicular to said axis.

9. A rotary valve assembly as claimed in claim 8 wherein said peripheral opening has a first trailing edge and said window has a second trailing edge whereby said port closes from said combustion chamber as said first trailing edge passes said second trailing edge as said valve rotates, and said first and second trailing edges are disposed such that as said port closes from said combustion chamber the instantaneous intersection point of said first and second trailing edges progressively moves away from said axial opening over at least 50% of the length of said window.

10. A rotary valve assembly as claimed in claim 8 wherein said peripheral opening has a first leading edge and said window has a second leading edge whereby said port opens to said combustion chamber as said first leading edge passes said second leading edge as said valve rotates, and said first and second leading edges are disposed such that as said port opens to said combustion chamber the instantaneous intersection point of said first and second leading edges progressively moves towards said axial opening over at least 50% of the length of said window.

11. A rotary valve assembly as claimed in claim 8 wherein said peripheral opening is narrower at its end proximate to said axial opening than at its end remote from said axial opening.

5 12. A rotary valve assembly as claimed in claim 11 wherein the width of said peripheral opening progressively decreases from a maximum at its end remote from said axial opening to a minimum at its end proximate to said axial opening.

10 13. A rotary valve assembly as claimed in claim 11 or 12 wherein the trailing edge of said peripheral opening is substantially parallel to said axis.

14. A rotary valve assembly as claimed in claim 8 wherein said window is narrower at its end proximate to said axial opening than at its end remote from said axial opening.

15 15. A rotary valve assembly as claimed in claim 14 wherein the width of said window progressively decreases from a maximum at its end remote from said axial opening to a minimum at its end proximate to said axial opening.

20 16. A rotary valve assembly as claimed in claim 14 or 15 wherein the trailing edge of said window is substantially parallel to said axis.

17. A rotary valve assembly as claimed in claim 8 wherein said window is substantially rectangular.

25 18. A rotary valve assembly as claimed in claim 8 wherein said port is an inlet port.